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The roadblocks to business ownership: Analyzing the challenges Thai physical therapists face despite entrepreneurial education

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ABSTRACT

Background: The field of entrepreneurship poses significant challenges for undergraduate students and physical therapists in Thailand. Entrepreneurial intention, entrepreneurial courses in the physical therapy curriculum, and personality qualities are likely the prominent influencers. The social-environmental factors, access to resources, and perceptions of opportunity are also suggested to play a role of the secondary influencers on entrepreneurship. Regrettably, there is a lack of empirical evidence about the impact of these effects on entrepreneurial concepts within physical therapy.

Objective: This study aimed to ascertain the mutual correlation and assess the primary and secondary influencers for entrepreneurship among undergraduate students and physical therapists.

Materials and methods: A cross-sectional study was conducted on 120 physical therapy students and general physical therapists. An online, structured questionnaire with a five-point Likert scale for primary and secondary influencing factors was designed. All questions' content validity and reliability were determined before being applied to all respondents, and a significant relationship was identified with Barlette's test. The Kaiser-Meyer-Olkin Measure (KMO) and the measure of sample adequacy (MSA) were used to assess the overall feasibility of factorial analysis. Finally, the IBM SPSS AMOS program analyzed the influence on entrepreneurship with structural equation modeling (SEM).

Results: The results from 120 responses (74 females and 46 males), 64 undergraduate students, and 56 general physical therapists were 25.81±6.62 years (21-51 years old). All questions showed good reliability. All influencing factors showed a significant relationship and feasibility through factor analysis (FA). Furthermore, the primary factors showed that personality traits strongly influenced entrepreneurship compared to entrepreneurial intention. However, the curriculum had a meager impact. In addition, secondary influencing factors, such as opportunity perception, access to resources, and social-environment factors, highly influence entrepreneurship.

Conclusion: Personality traits and entrepreneurial intention are the most influencing factors, but the course in the curriculum is less influential for entrepreneurship. On the other hand, opportunity perception, access to resources, and social/environmental factors are also the secondary strong influencing factors among physical therapy students and general physical therapists.

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Introduction

Entrepreneurship is essential for a new generation, as is the transition strategy of many education institutions worldwide. Chiang Mai University in Thailand is becoming a prominent catalyst for national progress. It accomplishes this by training competent and skilled individuals in

the entrepreneurial field who can provide answers and significantly contribute to advancing entrepreneurship education by nurturing a generation of well-informed entrepreneurs.[1] University students, like their counterparts in Malaysia and other countries, are required to enter the workforce upon completing their studies. Additionally, some students can transition into entrepreneurship.[2] In recent years, there has been a notable growth in interest in entrepreneurship among undergraduate and postgraduate students.[3] According to Voda and Florea (2019), entrepreneurship has become a compelling career choice for undergraduates worldwide. It has reached a new height among university graduates and post-graduate students at Chiang Mai University, which has only recently designed its curriculum from 2024 to 2030.[4] Despite the university's promotion of a new campaign or selected short courses related to entrepreneurship or business as a lifelong learning channel, the professional graduate program of physical therapy has maintained a fixed course syllabus for a long time without adding any subjects related to entrepreneurship or business. This could pose a significant obstacle for graduate students seeking to enhance their academic performance. According to many experts, entrepreneurship stimulates interest, passion, and entrepreneurial interest among youth.[5] As a result, the university should play an essential role in stimulating students' entrepreneurial intentions; one way to do this is to provide entrepreneurship education. A conceptual model and the Theory of Planned Behavior (TPB) organize the components that influence entrepreneurial intention.[6,7] Primarily, the approach distinguishes between internal and external causes. Internal factors can influence career choices primarily determined by models identifying individual characteristics and consistent behavior patterns.[8] Entrepreneurship is influenced by personal characteristics such as personality traits, risk-taking propensity, achievement orientation, locus of control,[9] access to resources that can significantly influence success and sustainability, and the opportunity perception of the business.[10] External factors focus on social, economic, and educational aspects. A contextual variable can influence an individual's intention to be an entrepreneur. External factors affect students' decisions at university and their didactic activities.[6] A previous study reported that education is the most critical element contributing to students' intention to start a company. The scarcity of jobs has forced the youth to compete for these positions.[11] Unemployment rates continue to rise as job seekers exceed the supply.[12] Previous evidence suggests that entrepreneurship education positively impacts students' entrepreneurial intentions.[13] From the perspective of both external and internal factors, education in course curriculum (C), personality trait (PT), and entrepreneurial intention (ET) should have a mutual relationship for entrepreneurship, as shown in the previous study in Romania[4] and Malaysia.[14] Moreover, the social/environmental factor (SE), access to resources (AR), and opportunity perception (OP) are also relationships together for business start-ups, which can change with different directions to entrepreneurship.[15] But, these factor relationships have not been approved among physical therapists in Thailand, which are developing in the future, as contrast evidence to building and changing business models among Dutch physiotherapy primary healthcare organizations.[16] Therefore, this study aimed to assess the relationship between influencing factors, either primarily factors such as personality traits, entrepreneurial intention, and entrepreneurial courses in the Bachelor's curriculum, or the social and environmental factors, access to resources, and opportunity perceptions of entrepreneurship as the secondary influencing factors among physical therapy students and physical therapists in Thailand as a concept framework in Figure 1. The results from this study on the mutual relationship between either primary influencing factors or secondary factors and influences possibly reflect the entrepreneurship trends among undergraduate students and general physical therapists that may benefit the global education policy on entrepreneurship.

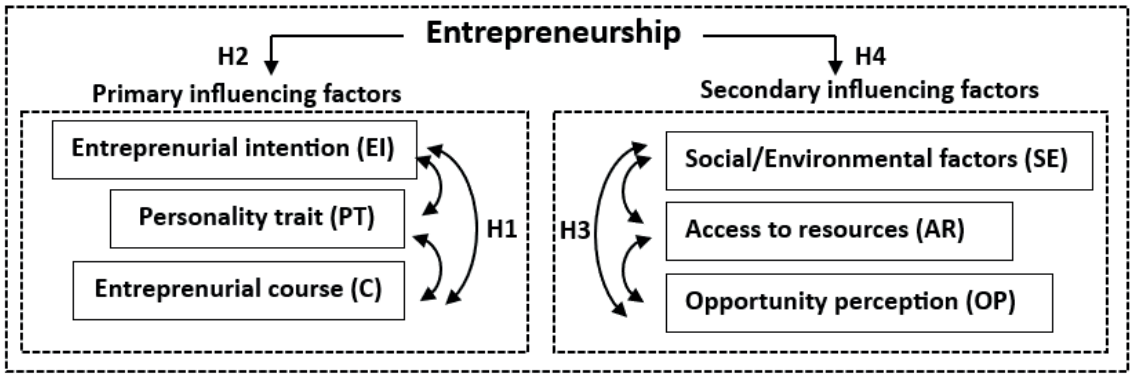

Figure 1. *Hypothesis development framework on primary and secondary influencing factors related to entrepreneurship.*

Hypothesis development primary influencing factors

H1: entrepreneurial intention (EI), entrepreneurial course (C), and personality trait (PT) had a positive mutual relationship.

H2: entrepreneurial intention (EI), entrepreneurial course (C), and personality trait (PT) had a different influence on entrepreneurship.

Hypothesis development on secondary influencing factors

H3: social and environmental factors (SE), access to entrepreneurial resources (AR), and opportunity perception (OP) had a positive mutual relationship.

H4: social and environmental factors (SE), access to entrepreneurial resources (AR), and opportunity perception (OP) had a different influence on entrepreneurship.

Methodology

This study conducted an online survey using Google Forms, targeting fourth-year physical therapy students and general physical therapists through an invitation letter and QR Code. The Human Ethical Committee at the Faculty of Associated Medical Sciences, Chiang Mai University, Thailand, approved the study protocol before initiating the data collection (AMS-Ex67-020). Before the respondents agreed to answer the questionnaires, they clearly understood the research details in the subject information sheet and submitted their e-signature online in Google Forms.

Sample size calculation

Minimum sample size estimation is one of the most fundamental issues in structural equation modeling (SEM). The "10-times rule" method is a common way to determine the minimum sample size for SEM.[17] It is based on the idea that the sample size should be more than 10 times the number of inner or outer model links that point to any latent variable in the model. Although PLS-SEM users favor this method for its ease of application, Goodhue *et al*. have demonstrated that it can result in inaccurate estimates.[18] Therefore, the accessible population applied to all 120 students and physical therapists because the ratio of primary influencing factor questions and respondents was 1:10 from the minimal sample size estimation.

Outcomes and Instruments

All respondents completed questionnaires using a five-point Likert scale ranging from strongly agree (5 marks) to strongly disagree (1 mark). Three items of primary influencing factors, namely personality traits (PT), entrepreneurial intention (EI), and entrepreneurial course in the curriculum (C), dominate a structured 24-questionnaire. Secondary influencing factors include social and environmental factors (SE), access to resources (AR), and opportunity perception (OP), all of which have an impact on entrepreneurship. Two qualitative research experts, along with a pilot study of 30 students, rechecked the content validity of all the well-structured, closed-ended questionnaires and the reliability of the questions by calculating Cronbach's alpha coefficient, which should be greater than 0.7.[19]

Entrepreneurial intention[20,21]

EI1: I strongly desire to start my own business in the future.

EI2: I am actively exploring entrepreneurial opportunities and ideas.

EI3: I am committed to pursuing entrepreneurship as a career path.

EI4: I have the necessary skills and knowledge to be a successful entrepreneur.

Personality trait[20,21]

PT1: I enjoy leading and motivating others toward common goals.

PT2: I am adaptable and able to adjust to changing circumstances.

PT3: I am creative and innovative in solving business challenges.

PT4: I communicate effectively with stakeholders in my business.

Entrepreneur course in the curriculum[22]

C1: Some entrepreneurial courses have been taught to me.

C2: The entrepreneurship course I took at the university has taught me to develop a business owner in the future.

C3: The entrepreneurship course has taught me to develop business plans successfully.

C4: The entrepreneurship course has taught the essential business skills (C4).

Social and environmental factors[20,21]

SE1: My future business will have values and promote social responsibility and ethical practices.

SE2: I will have strong relationships with our customers and prioritize customer satisfaction.

SE3: My future business will comply with environmental regulations and strive to exceed minimum standards.

SE4: My future business will invest in technologies or innovations that improve our environmental performance and efficiency.

Access to resources for entrepreneurship[23]

AR1: I can access sufficient financial resources to pursue entrepreneurial opportunities.

AR2: I can access mentorship or guidance from experienced entrepreneurs or business professionals.

AR3: I can access networks or connections that can help me access opportunities, resources, or support.

AR4: I can access information and knowledge about entrepreneurship and business management.

Opportunity perception for entrepreneurship[23]

OP1: There are abundant entrepreneurial opportunities in the market.

OP2: I perceive potential gaps or unmet needs in the market that could be addressed through entrepreneurship.
OP3: I am confident in identifying and evaluating promising entrepreneurial opportunities.
OP4: I see entrepreneurship as a means to create value and positively impact society.

Statistical analysis

All questionnaires were rechecked for the validity of the questions from an index of item-objective congruence (IOC) by three survey experts. The index was computed using the item congruence index to measure the agreement with a rating of +1 (clearly does measure the objective), 0 (unclear), and -1 (clearly does not measure the objective) in each item. The result indicates the IOC indices for all the items rated by the three experts ranged from 0.33 to 1.0. The IOC within 0.5 to 1.00 indicates acceptable and is to be retained for measurement.[24] Whereas, the reliability of questionnaires was approved by Cronbach's alpha coefficient, which should be greater than 0.7.[19] The feasibility of all influences that could be suitable through the fit model in structural equation modeling (SEM) analysis was evaluated with confirmatory factor analysis (CFA) from the Kaiser-Meyer-Olkin Measure (KMO) (p<0.05) and the average of Measures of Sample Adequacy (MSA) (>0.5).[25]Then, a fit model was evaluated the relative Chi-Square (χ^2), goodness-of-fit index (GFI), normal fit index (NFI), Tucker-Lewis index (TLI), comparative fit index (CFI), root mean square error of approximation (RMSEA), and root mean square residual (RMR). The final fit models can be declared the model's suitability if they have a relative χ^2 below 2.0, GFI, NFI, TLI, and CFI values above 0.9, and RMSEA and RMR values below 0.05.[26] In addition, the level of influence of each factor on entrepreneurship can be identified from a saturated estimate value. The IBM ® SPSS ® AMOS 23.0.0 (USA) software was used for statistical analysis.

Results

Twenty-four questionnaires from 30 respondents showed good reliability for each item and question. The Cronbach's alpha coefficient for all 24 questionnaires is 0.897. It's acceptable for each item questionnaire: (1) intention to start a business (0.780), (2) course support in the curriculum (0.947), (3) personality traits (0.903), (4) social and environmental factors (0.872), (4) access to resources (0.789), and (5) opportunity perception (0.747), (Table 1).

Table 1. The reliability of each item in each questionnaire (N=30).

Items	Questions	Cronbach's Alpha	
Entreprenurial intention (EI)	EI1	0.894	0.780
	EI2	0.895	
	EI3	0.890	
	EI4	0.892	
Entreprenurial course in the curriculum (C)	C1	0.896	0.947
	C2	0.892	
	C3	0.891	
	C4	0.893	
Personality traits (PT)	PT1	0.892	0.903
	PT2	0.893	
	PT3	0.897	
	PT4	0.895	
Social/Environmental factor (SE)	SE1	0.896	0.872
	SE2	0.894	
	SE3	0.897	
	SE4	0.893	
Access to resources (AR)	AR1	0.898	0.789
	AR2	0.895	
	AR3	0.889	
	AR4	0.891	
Opportunity perception (OP)	OP1	0.890	0.747
	OP2	0.889	
	OP3	0.890	
	OP4	0.889	

Table 2 presents the data of all 120 respondents. From the 120 respondents (74 females and 41 males), there are fourth-year students (N=64) and general physical therapists (N=56). The mean age was 25.8±6.62 (21-51 years old). The family or respondents' occupations were classified into three items: non-related business (N=92, 76.7%), general business (N=19, 15.8%), and physical therapy clinic (N=9, 7.5%). The intention to pursue entrepreneurship included an interest in becoming a business owner (N=17, 14.2%), an Interest but unsure of being an entrepreneur (N=80, 66.7%), a non-related physical therapy business (N=5, 4.2%), a physical therapy business (N=9, 7.5%), and an uninterest in business (N=9, 7.5%). Finally, the prior learning on entrepreneurial courses showed the most learning in a free-elective course (N=67, 55.8%), whereas learning in the main course in the curriculum (N=25, 20.8%), other courses (N=13, 10.8%), and no learning from any courses (N=15, 12.5%), respectively.

Table 2. The primary data of 120 respondents.

Respondents	120
Undergraduate physical therapy students	64
General physical therapists	56
Gender: females/males	74:46
Aged (years)	25.8±6.62 (21-51)
Family occupation	
Non-related business job	92 (76.7%)
General business	19 (15.8%)
Physical Therapy clinic	9 (7.5%)
Intention in entrepreneurship	
Interest and expect to be an entrepreneurship	17 (14.2%)
Interest but unsure to be an entrepreneurship	80 (66.7%)
Interest in non-related physical therapy business	5 (4.2%)
Physical therapy business	9 (7.5)
No at all in business	9 (7.5%)
Entrepreneurial course learning	
Main course in the Bachelor's curriculum	25 (20.8%)
Free elective course in the Bachelor's curriculum	67 (55.8%)
Other courses from the Bachelor's curriculum	13 (10.8%)
Never Learned	15 (12.5%)

Relationship between influencing factors for fit model analysis

The results of the relationship analysis between three items of primary influencing factors curriculum (C), personality traits (PT), and EI evaluated with Bartlett's Test of Sphericity showed that all had a significant relationship (>0.5). The KMO showed the overall feasibility of all influences, revealing an average sample adequacy (MSA) of 0.841 and individual values ranging from 0.741 to 0.898 (Table 3). Therefore, we can conclude that all influencing factors are viable for analyzing the goodness-of-fit model to predict entrepreneurship. In addition, the other three items of secondary influencing factors—social/environmental factors (SE), access to resources (AR), and opportunity perception (PO)—were all found to have a significant correlation at 0.05. The overall feasibility of all influences can be assessed through the confirmatory factor analysis (CFA) with the Kaiser-Meyer-Olkin Measure (KMO), which showed an average of measures of sample adequacy (MSA) at 0.796 and an individual value within 0.712 to 0.876 (Table 4) that was more than 0.5.[17] Therefore, we can conclude that the goodness-of-fit model can analyze all secondary influences to predict entrepreneurship.

Table 3. Relationship between all influencing factors from 120 respondents.

Influencing factors	EI1	EI2	EI3	EI4	C1	C2	C3	C4	PT1	PT2	PT3	PT4
EI1	**0.806**[a]											
EI2	-0.446	**0.824**[a]										
EI3	-0.389	-0.379	**0.856**[a]									
EI4	-0.157	-0.080	-0.121	**0.848**[a]								
C1	0.010	0.020	0.091	0.026	**0.895**[a]							
C2	-0.252	0.262	0.096	-0.214	-0.201	**0.804**[a]						
C3	0.059	-0.037	-0.274	0.316	-0.370	-0.550	**0.741**[a]					
C4	0.219	-0.159	0.124	-0.311	0.064	-0.069	-0.557	**0.792**[a]				
PT1	0.014	0.116	-0.117	-0.237	0.027	-0.044	-0.038	0.085	**0.883**[a]			
PT2	0.014	-0.031	-0.071	-0.076	-0.154	0.181	0.006	-0.108	-0.348	**0.871**[a]		
PT3	0.171	-0.123	-0.088	-0.050	0.061	-0.110	-0.108	0.120	-0.046	-0.282	**0.875**[a]	
PT4	-0.130	-0.046	0.097	-0.116	0.033	0.011	-0.058	0.068	-0.149	-0.121	-0.351	**0.898**[a]
Bartlet's test=0.796, Sig=0.000, KMO=0.841, MSA between 0.741 to 0.898.												

Note: *a: measures of sampling adequacy (MSA), C: curriculum, PT: personality traits, E: entrepreneurial intention.*

Table 4. Relationship between all influencing factors from 120 respondents.

Influencing factors	SE1	SE2	SE3	SE4	AR1	AR2	AR3	AR4	OP1	OP2	OP3	OP4
SE1	**0.830**[a]											
SE2	-0.541	**0.769**[a]										
SE3	-0.137	-0.232	**0.777**[a]									
SE4	-0.011	0.001	-0.578	**0.738**[a]								
AR1	0.193	-0.192	0.146	-0.198	**0.743**[a]							
AR2	-0.122	0.270	-0.098	0.033	-0.143	**0.838**[a]						
AR3	-0.032	-0.118	0.028	-0.113	-0.264	-0.417	**0.837**[a]					
AR4	-0.096	0.017	-0.061	0.213	-0.189	-0.031	-0.311	**0.871**[a]				
OP1	0.059	-0.144	0.157	0.074	-0.160	-0.012	0.165	-0.057	**0.712**[a]			
OP2	0.060	0.004	0.061	-0.106	0.103	-0.105	-0.110	-0.048	-0.183	**0.876**[a]		
OP3	-0.252	0.143	-0.190	0.119	-0.545	-0.025	0.037	0.081	0.053	-0.377	**0.796**[a]	
OP4	-0.045	-0.299	0.039	-0.075	0.272	-0.353	0.154	-0.223	-0.357	-0.093	-0.122	**0.775**[a]
Bartlet's test = 0.762, Sig = 0.000, KMO = 0.796, MSA between 0.712 to 0.876.												

Note: *a: measures of sampling adequacy (MSA), SE: social/environmental factor, AR: access to resources, OP: opportunity perception.*

Goodness-of-Fit model and structural equation modeling result

The goodness-of-fit model was analyzed with the structural equation model (SEM), or model testing, which can predict the influencing factors, either primary or secondary, on entrepreneurship. The SEM analysis result, EI4, revealed a saturated estimate of less than 0.7, prompting the exclusion of the question before analyzing the model fit. The influence analysis can be concluded in Table 5 that personality traits (βi=1.06), how people see opportunities (βi=0.96), how easy it is to get resources (βi=0.81), and social-environment factors (βi=0.74) all have a significant effect on starting a business. Whereas entrepreneurial intention (βi=0.61) and entrepreneurial courses in the curriculum (βi=0.38) showed a lower influence.

Table 5. Goodness-of-Fit model.

Goodness-of-Fit model	βi	bi	SE	R^2
Primary influencing factors				
Entreprenurial intention (EI)	0.61	0.37	0.30	0.37
Curriculum (C)	0.38	0.32	0.30	0.15
Personality traits (PT)	1.06	1.00	0.00	1.13
χ2=29.176; df=35; relative χ2=19.176 ; *p*=0.745; GFI=0.961; NFI=0.971; TLI=1.00; CFI=1.00; RMSEA=0.000; RMR=0.035				
Secondary influencing factors				
Social/Environmental factor (SE)	0.74	0.64	0.110	0.44
Access to resources (AR)	0.81	0.91	0.137	0.63
Opportunity perception (OP)	0.97	0.97	0.133	0.94
χ2=90.581; df=72; relative χ2=90.581; *p*=0.069; GFI=0.913; NFI=0.921; TLI=0.974; CFI=0.982; RMSEA=0.047; RMR=0.036.				

The suitability SEM of primary influencing factors was χ2=29.176; df=35; relative χ2=19.176; *p*=0.745; GFI=0.961; NFI=0.971; TLI=1.00; CFI=1.00; RMSEA=0.000; RMR=0.035 (Figure 2). Three influencing factors in Table 5 documented that the personality trait is a well-factor fit for the model (R^2=1.13) when compared to entrepreneurial intention (R^2=0.37) and curriculum (R^2 0.15). A deep evaluation of each question reveals a strong evaluation of E1 to EI3, with standardized regression weights of 0.90 and 0.89. The C3, C2, C4, and C1 can evaluate the curriculum course with standardized regression weights of 0.98, 0.91, 0.86, and 0.82, respectively. On the other hand, The results of personality trait showed series standardized regression weights of 0.80, 0.75, 0.72, and 0.64 in PT3, PT4, PT2, and PT1.

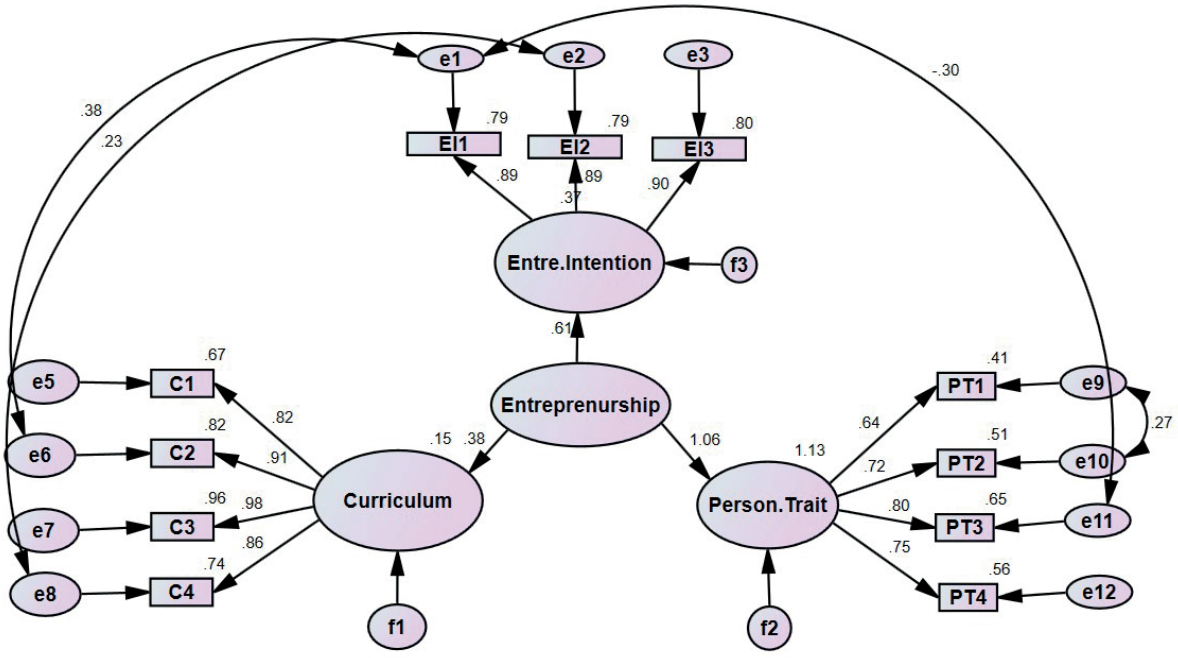

Figure 2. *Path diagram of structural equation model (SEM) analysis in the primary influencing factors: entrepreneurial intention, the entrepreneurial course in the curriculum, and personality traits among 120 respondents.*

Moreover, the suitability SEM of secondary influencing factors was χ2=90.581; df=72; relative χ2 =90.581; *p*=0.069; GFI=0.913; NFI=0.921; TLI=0.974; CFI=0.982; RMSEA=0.047; RMR=0.036 (Figure 3). In Table 5, three influencing factors documented that opportunity perception (OP) is a good factor fit for the model (R^2=0.94) when compared to access to resources (R^2=0.63) and social-environmental factors (SE) (R^2=0.44). The path diagram analysis reveals that we can evaluate social and environmental factors from SE1, SE2, SE3, and SE4 with standardized regression weights of 0.86, 0.82, 0.66, and 0.49. In addition, access to resources (AR) results showed the AR3, AR2, AR1, and AR4 at 0.84, 0.79, 0.73, and 0.69. Finally, the opportunity perception(OP) on entrepreneurship showed that OP3, OP2, OP4, and OP1 were 0.81, 0.70, 0.47, and 0.36, respectively.

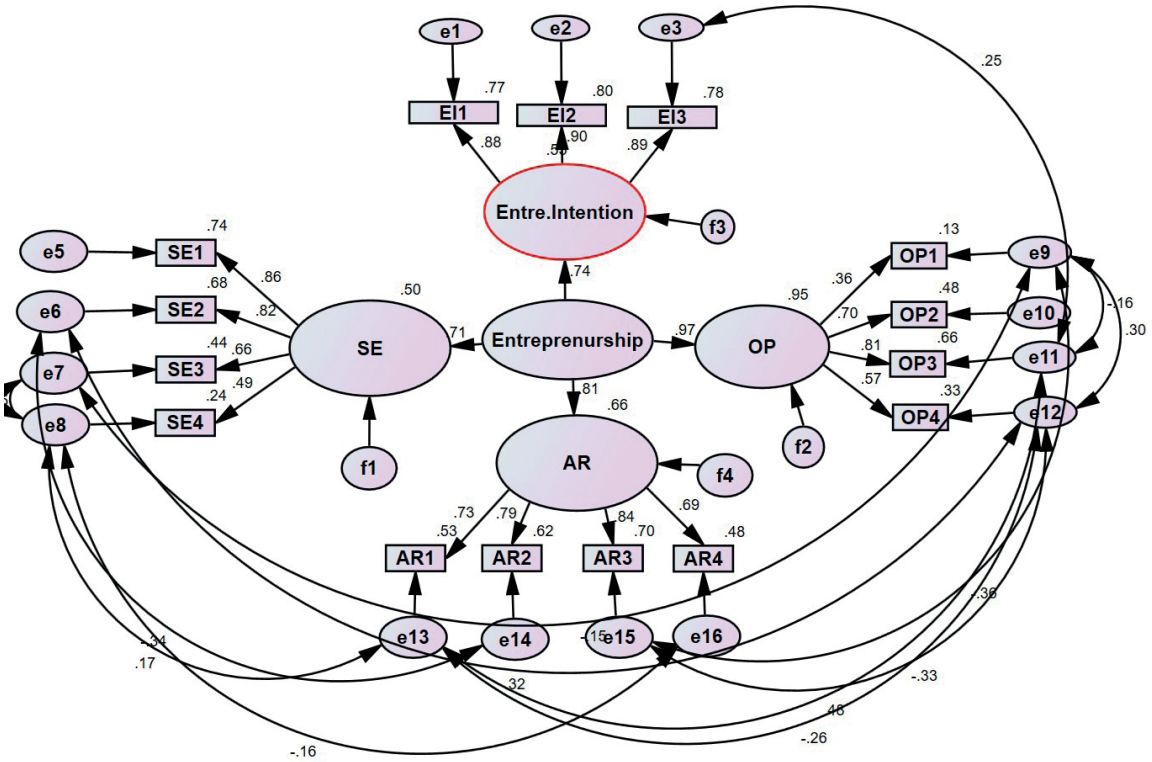

Figure 3. *Path diagram of structural equation model (SEM) analysis on the secondary influencing factors: social and environmental factors (SE), access to resources (AR), opportunity perception (OP), and entrepreneurial intention among 120 respondents.*

Discussion

This study introduced the concept of entrepreneurship among physical therapists, including undergraduate students and general practitioners, which is a recent trend in Thailand. The respondents' raw data revealed their various occupations, such as government service. This study recruited the different influencing factors such as personality traits, entrepreneurial intention, and entrepreneurial courses in the physical therapy curriculum. These influencing factors align with previous educational proposals,[1] focusing on undergraduate or postgraduate students,[3] who have the potential to become business owners, [2] and the personality traits associated with entrepreneurship.[9] The study's secondary influencing factors on entrepreneurship also cited prior research demonstrating the impact of opportunity perception,[10] resource accessibility, and social or environmental factors.[6] All questions must undergo content reliability testing for the study of structural equation modeling (SEM) or all factor analysis, and the Cronbach's alpha coefficient should be greater than 7.0. A previous study suggested a small pilot sample size of 30 for this study.[27] The results from six influencing factors had 24 items or questions with a 5-Likert scale for every item; the coefficient was more than 7.0, which means the internal consistency of instrument items can be used for a larger sample size or population.[28]

We conducted this study with 120 physical therapists, following the previous suggestion. The last recommendation stated that for confirmatory factor analyses with 6 to 12 indicator variables per factor, a sample size of N=50 is sufficient, whereas, for 3 to 4 indicators per factor, a sample size of N=100 is necessary.[29] Also, the "10-times rule" method is a common way to figure out the minimum sample size for SEM.[17] It is based on the idea that the sample size should be more than 10 times the number of inner or outer model links that point to any latent variable in the model. Despite being popular among PLS-SEM users due to its ease of application, Goodhue et al. have demonstrated that this method can result in inaccurate estimates.[18] Therefore, the accessible population included all 120 physical therapists, as the ratio of questions to respondents was 1:10 based on the minimal sample size estimation.

Correlation and feasibility of all influencing factors for model fit analysis

The feasibility of all influences that could be suitable through the fit model in structural equation modeling (SEM) analysis was evaluated with confirmatory factor analysis (CFA) from the Kaiser-Meyer-Olkin Measure (KMO) ($p<0.05$) and the average of Measures of Sample Adequacy (MSA) (>0.5).[25] Previous research suggested that MSA should be higher than 0.50, and Bartlett's sphericity test showed enough correlations or relationships between variables in each study.[30,31] The Structural Equation Model (SEM) comprises two primary components: the structural and measurement models. Several observable variables compose the simple measurement model-type SEM, while a latent variable carries measurement errors. However, all

latent variables represent the structural model through their correlation.[32] The consistency theory in this study suggests that we can apply SEM analysis to assess the correlation and factors that influence entrepreneurship among physical therapists. Moreover, selecting a retention criterion from the MSA value is a crucial decision that precedes factor analysis in this study.[33] The maximum likelihood factor extraction method (ML) is one of many techniques used to identify the final factors based on the various model fit indexes as the root mean square error of approximation (RMSEA).[34]

Goodness-of-Fit model

The path diagram on entrepreneurship, derived from primary and secondary influencing factors, illustrates the program's final modified or revised model, which is determined by observing the value of all goodness-of-fit metrics. This study evaluated the model using the goodness-of-fit index (GFI), normal fit index (NFI), Tucker-Lewis index (TLI), comparative fit index (CFI), root mean square error of approximation (RMSEA), and root mean square residual (RMR). We can declare fit models suitable if they have a relative χ2 below 2.0, GFI, NFI, TLI, and CFI values above 0.9, and RMSEA and RMR values below 0.05.[26] The basic interpretation suggested the Chi-Square (χ2) for good fit should be between 0 and less than 2df,[35] and the GFI, CFI, NFI, and TLI values range from 0-1, with a higher value indicating a better fit.[36-38] Conversely, values near zero for RMSEA and RMR indicate a robust model fit.[39] Therefore, this result showed the accepted model fit.

The suitability model for entrepreneurship among physical therapists includes primary and secondary influence factors. Unsaturated (bi) and saturated estimates (βi), standard error (SE), and R^2 were reported from model fit analysis and visualized results on the path diagrams.

In this study, personality traits are the strongest influencer when compared to entrepreneurial intention, and the entrepreneurial course in the curriculum has the lowest influence on entrepreneurship among physical therapists, which is consistent with a previous document. Previous evidence suggested that entrepreneurship education positively impacts students' entrepreneurial intentions.[13] Individual reactions to external conditions or environments can generate personality traits.[40] A previous report claimed that personality traits are directly related to entrepreneurial intention.[42] This study didn't evaluate the direct effect of both. In this study, the personality traits are strongly associated with entrepreneurship, similar to a previous study on students in Pakistan.[43] Moreover, the primary factors influencing entrepreneurship are courses in the curriculum related to business start-ups among students in Romania[4] and Malaysia.[14] The other result of the entrepreneurial course in the curriculum showed the lowest saturated estimate (βi) on the model related to entrepreneurship among physical therapists. However, a previous study proposed that entrepreneurship curricula delivery can improve entrepreneurs' abilities and mindsets.[43] The findings of this study among physical therapists stand in contrast, possibly due to the influence of the previous curriculum. Approximately 50% of the 120 respondents, or physical therapists, were general physical therapists who underwent the curriculum without the entrepreneurial course. Therefore, the entrepreneurial course in the study had a minimal impact on the final model. Finally, most family occupations unrelated to business account for the moderate influence of entrepreneurial intention among physical therapists on entrepreneurship. Thai family culture mainly exhibits less interest in business during economic downturns. Previous evidence suggests that cross-cultural differences in developing countries influence the reported entrepreneurial intention among undergraduate students, supporting these results.[44]

The study recruited business ideas, social-environmental factors, resource access, and opportunity perception as secondary influencing factors. In the SEM analysis on the secondary influencing factors, the results revealed the excellent influence of opportunity perception and access to resources that believed the opportunity and potential gaps for business in the market. Moreover, the respondents have access to mentorship, guidance, networks, and connections that can help them access opportunities, resources, and support. Numerous cooperative departments have existed in Thailand, including the National Science and Technology Development Agency (NSTDA), which has developed Business and Entrepreneurial Acceleration Programs and Special Units within universities to foster advanced entrepreneurship. However, the suitability model's business results on social and environmental factors showed a high influence factor on entrepreneurship with value, promoting social responsibility, and a strong relationship with customers and satisfaction. However, environmental factor (SE), access to resources (AR), and opportunity perception (OP) related to business start-ups among students and physical therapists have been fewer facilities or regulations; thus different directions to entrepreneurship were contrasted in the previous recommendation.[15]

Moreover, among physical therapists in Thailand, business technologies or innovations had the least influence. Owner-owned businesses in physical therapy clinics have received less attention than small businesses in the United States, which were reported for brand awareness, relationship marketing, perceived quality, online marketing, and WOM marketing.[45] Therefore, valuing and promoting social responsibility, strong relationships with customers, and satisfaction in physical therapy clinics will be significant in Thailand in the future.

The survey data from 120 respondents proposed that most knowledge (67, or 55.8%) had studied entrepreneurship in the free-elective course, whereas only 20% (N=25) studied in the main course within the curriculum. In addition, some respondents learned about entrepreneurship from an outside program (10.8%) or had not studied it (12.5%). Thus, this evidence indicates that entrepreneurship among physical therapy students and physical therapists still needs to be more common in universities. The role of educational government must encourage entrepreneurship education in all universities, as the

previous suggestion,[46] meant that the principal education on physical therapy courses at Chiang Mai University was unsuccessful. Moreover, the entrepreneurship mindset among students and physical therapists still needs to be determined because the extra-open-end interview results support the idea that entrepreneurship knowledge and skills may be constructed in free electives (49.2%) or main curriculum courses (41.7%). Therefore, this means that entrepreneurship is still unnecessary for physical therapists in the future, and the respondents proposed that entrepreneurship skills are still not required.

Conclusion and suggestions

Personality traits and entrepreneurial intention individually influence the roadblock to business ownership among physical therapy students and physical therapists, whereas the curriculum course has less influence on entrepreneurship. However, opportunity perception, resource access, and social-environment factors have fully supported start-up businesses. Additional informed results from fifty percent of total respondents recommended that entrepreneurship should be taught theory and practice (N=61, 50.8%), whereas others proposed only theory learning without entrepreneurship skill training. Furthermore, the free-elective course ought to include the entrepreneurial course. Encouraging young physical therapists to embark on new entrepreneurial ventures could potentially hinder their chances of success. Finally, we should promote future implementation of the rearranged programs in the leading physical therapy curriculum, either undergraduate or postgraduate, focusing on entrepreneurial experience and essential business skills training.[47] Finally, other universities and physical therapists in Thailand, such as Central, Eastern, Southern, etc., still study different curriculums. Therefore, it is impossible to summarize these results for generalization precisely; further studies with more extensive sample sizes, including other cultures and economic status, are necessary for confirmation.

Conflict of interest

No conflict of interest

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